RESEARCH

Cariboo Forest Region

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EXTENSION NOTE #3
February 1993

Siberian and Western Larch Species Trial

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- **Reforestation**
- **Stand Tending**
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- **Guideline Verification**
- **Extension**

INTRODUCTION

Siberian and western larch were chosen for comparison with four other species in this trial. Larch may provide another species choice for silviculturists, which could be especially beneficial on drier ecosystems with limited species options.

Western larch (*Larix occidentalis*) is generally a fast-growing species on productive sites, and appears to have a higher resistance to Armillaria root disease (*Armillaria ostoyae*) than native conifers. Western larch also produces high-quality wood. Siberian larch grows over a wide range of Eurasia, extending north from below the fiftieth parallel, and may be well adapted to short growing seasons and cold winters.

A species trial was established in 1987 to test the potential of these two larch species in the Cariboo across four biogeoclimatic subzones (IDFdk4, SBSmw, ICHwk2 and ESSFwk1) and compare them to three native species - interior spruce, lodgepole pine and Douglas-fir - along with an introduced species, ponderosa pine. Spruce was not planted on the dry IDFdk4 site, and Douglas-fir and ponderosa pine were not used on the high elevation ESSFwk1 site. Most of the seedlings were grown in PSB 313 styroblock containers, except for all of the pine and the western larch seedlings on the ESSFwk1 site, which were grown in PSB 211 containers.

SURVIVAL

Seedling survival was adequate on all sites and for all species, except for lodgepole pine in the ESSFwk1 and western larch and Douglas-fir on the IDFdk4 site. The unusual poor pine survival may be due to stock

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quality or planting problems. Low Douglas-fir survival on dry sites is common, and is partly due to frequent frosts during the growing season. Siberian larch survival was very good on all sites, and was comparable to pine.

Seedling condition was assessed to predict potential crop tree stocking. Douglas-fir and western larch were performing poorly on the IDFdk4 site, with 10% or fewer of the seedlings judged acceptable. Siberian larch performance on this dry site was marginal at only 43% of the seedlings showing potential to become crop trees.

SEEDLING GROWTH

Lodgepole pine had the largest mean diameter on all sites, except on the IDFdk4 where lodgepole and ponderosa pine had similar diameters. Diameters of the two larch species were either larger or not significantly different from all other native species. Siberian larch had significantly larger mean diameters than western larch on all of the sites except the ICHwk2.

The five-year total height growth data show the same general trends as the diameter measurements. Lodgepole pine is significantly taller than all other species, except on the ICHwk2 where western larch and lodgepole pine heights are similar. However, the fifth year leader growth of lodgepole pine is significantly larger than that of all species on all sites. On most sites, the heights of the two larch species were not significantly different, and are equal to or larger than the heights of the other native species.

DISCUSSION

Siberian larch has shown better five-year performance on three subzones (IDFdk4, SBSmw and ESSFwk1) than western larch. Their total height growth is equal, but Siberian larch diameter is larger, which would help seedlings withstand snow or vegetation press.

The worst larch performance occurred in the IDFdk4. Western larch may be particularly sensitive to frost occurrences during the growing season.

Lodgepole pine performance was superior to both larch species on all sites. However, larch is growing as well or better than the other native species.

Larch may be a suitable species for regeneration in the SBSmw, ICHwk2 and ESSFwk1, judging from the five year growth results. Western and Siberian larch are both susceptible to frost damage though, which would reduce growth rates and possibly damage tree form.

CONCLUSIONS

Western and Siberian larch have potential for operational planting in the Cariboo Forest Region. Siberian larch is very well suited to milder moist ecosystems - the ICHwk2 and the SBSmw - with possibilities for the ESSFwk1 and IDFdk4. Western larch showed high leader damage from frost in the IDFdk4, but acceptable growth and condition in the other three subzones. Seedling performance and leader damage require further monitoring prior to operational recommendations for regeneration in the Cariboo.

CONTACT

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REFERENCE

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